ZHELEZNYAKOV, V.V.

Interaction of electromagnetic waves in a plasma. Part 2. Izv. vys. ucheb. zav.; radiofiz. 2 no.6:858-868 '59. (MIRA 13:6)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Electromagnetic waves) (Plasma (Ionized gases)

S/141/60/003/02/002/025
E192/E382

AUTHOR: Zheleznyakov, V.V.

TITLE: The Instability of Magnetically-active Plasma Relative to High-frequency Electromagnetic Perturbations. II. 21

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 2, pp 180 - 191 (USSR)

ABSTRACT: The problem of the instability of magnetically-active plasma, in which the scattering of particles occurs on account of transverse and longitudinal impulse components is investigated on the basis of the relativistic scattering equation, described in an earlier paper (Ref 1). It is assumed that the electromagnetic perturbation is propagating along the magnetic field H_0. In the previous paper it was assumed that the distribution of electrons in plasma was described by the δ-function. Here the following distribution function is considered:

$$f_o(p)\,dp = A\exp\left[-(p_\parallel - p_\parallel^o)^2/a_\parallel^2 - (p_\perp - p_\perp^o)^2/a_\perp^2\right] dp \quad (1.1)$$

where dp is a volume element, $p_\parallel$ is the longitudinal

Card1/6

The Instability of Magnetically-active Plasma Relative to High-frequency Electromagnetic Perturbations. II.

impulse component and $p_{\perp}$ is the transverse impulse component. The factor A in Eq (1.1) is defined by Eqs (1.2). In the previous work it was shown that the relationship between the wave number k and the frequency is described by the scattering equation which is in the form of Eq (1.3). The scattering equation can also be written as Eq (1.4), where c is the velocity of light, n_j is the refraction coefficient of the medium, Ω_o is the natural frequency of plasma and Ω_H is the gyrofrequency. By introducing the notation defined by Eqs (1.5) and (1.6) the scattering equations can be written as Eqs (1.3a) and (1.4a). The integrals I_1, I_2 and I_3 can be represented by the general integral of Eq (1.7), where the subintegral functions have singularities at the points defined by Eqs (1.8). The integrals can also be expressed by Eq (1.9). In the final form the integrals can be written in the form of Eq (1.12), where the functions F are defined by Eqs (1.11). The scattering equations become very complicated

VC

S/141/60/003/02/002/025
E192/E382

The Instability of Magnetically-active Plasma Relative to High-frequency Electromagnetic Perturbations. II.

if the integrals of Eqs (1.9) or (1.12) are substituted into them. However, in the limiting case when the conditions defined by Eqs (2.1) are fulfilled, the equations can be greatly simplified. For this case the integrals I can be expressed approximately by Eq (2.3). Consequently, Eq (1.4a) can be written as Eq (2.4). If it is assumed that the mass of the particles in plasma and the plasma frequency can be represented by Eqs (2.5), the final expression for the scattering is in the form of Eq (2.7). The parameters ξ_1, ξ_2 and ξ_3 in Eq (2.7) can be expressed approximately by Eqs (2.8), where the parameters Φ and G are defined by Eqs (2.9) and (2.10). It is therefore possible to transform Eq (2.7) into Eq (2.11). The latter can be written approximately as:

Card3/6

S/141/60/003/02/002/025
E192/E382

The Instability of Magnetically-active Plasma Relative to High-frequency Electromagnetic Perturbations. II

$$c^2k^2 - \omega^2 n_j^2(\omega) + \sum \tilde{\Omega}_o^2 \frac{\omega\tilde{m} - kp_{\parallel}^o}{\omega\tilde{m} - kp_{\parallel}^o \mp \tilde{\Omega}_H \tilde{m}} +$$

$$+ \sum \tilde{\Omega}_o^2 \frac{(c^2k^2 - \omega^2) M}{(\omega\tilde{m} - kp_{\parallel}^o \mp \tilde{\Omega}_H \tilde{m})^2} + \qquad (2.12)$$

$$+ i \left[\text{terms containing } e^{-\xi \ell} \right] = 0$$

Card 4/6

VC

S/141/60/003/02/002/025
E192/E382

The Instability of Magnetically-active Plasma Relative to High-frequency Electromagnetic Perturbations. II.

where:

$$M = (a_{\perp}^2 G_3/G_o - a_{\parallel}^2)/2c^2 \qquad (2.13) .$$

By comparing Eq (2.12) with the scattering formula of the previous paper it is seen that the latter can be derived from Eq (2.12). The distribution function given by Eq (1.1) expresses the characteristic properties of the actual distribution of the particles in that it can describe the presence of the scattering, the anisotropy of the temperatures and the finite mean velocity of the particles. It does not represent, however, the equilibrium distribution. This can be described approximately by Eq (2.17). If this formula is substituted into Eq (2.4), the resulting scattering formula will be also in the form of Eq (2.11).
There are 7 Soviet references.

Card5/6

S/141/60/003/02/002/025
E192/E382

The Instability of Magnetically-active Plasma Relative to High-frequency Electromagnetic Perturbations. II.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific-research Radiophysics Institute of Gor'kiy University)

SUBMITTED: December 11, 1959

√c

Card 6/6

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

24,2120

80122

S/141/59/002/06/003/024
E032/E314

AUTHOR: Zheleznyakov, V.V.

TITLE: On the Interaction of Electromagnetic Waves in a Plasma. II.

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 6, pp 858 - 868 (USSR)

ABSTRACT: Part I of the present paper was published in Vol 1, Nr 4 (1958) of the present journal.
In Part I, relations were obtained between the coefficients of the asymptotic solution on either side of the interaction region. These relations are summarized in Eqs (1.1) to (1.5) of the present paper. The aim of the paper is to consider certain concrete cases of interaction of normal waves in a weakly non-uniform magneto-active plasma for $\omega_H/\omega < 1$ and $\omega_H/\omega > 1$, where ω is the wave frequency and ω_H is the gyro-frequency. Explicit relations are obtained for the characteristic parameters of the interaction, which apply to the case where the angles between the constant magnetic field and the direction of propagation of the waves are small. Eqs (1.1) - (1.4),

Card1/2

80122

S/141/59/002/06/003/024
E032/E314

On the Interaction of Electromagnetic Waves in a Plasma. II.

in principle, represent a complete solution of the problem of the interaction of electromagnetic waves in a plane-layered magneto-active plasma, so that the extension to the concrete case of the interaction of "normal" waves consists merely of a detailed discussion of these relations, which is now given.
There are 1 figure and 5 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific-research Radio-physics Institute of Gor'kiy University)

SUBMITTED: July 16, 1959

Card 2/2

69414

S/141/60/003/01/005/020
E192/E482

24,2120

AUTHOR: Zheleznyakov, V.V.

TITLE: Instability of the Magnetically Active Plasma Relative to the High Frequency Electromagnetic Perturbations. Part I.

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 1, pp 57-66 (USSR)

ABSTRACT: The article deals with the conditions of instability of the magnetically active plasma relative to electromagnetic perturbations in the absence of losses in trasverse and longitudinal impulse components $p_\perp$ and $p_\parallel$. It is also assumed that the perturbations propagate along a constant magnetic field H_0. From the Maxwell equations it follows that for a harmonic wave propagating in a tensorial medium having a permitivity $\varepsilon_{ik}(\omega,k)$ the scattering equation which relates the frequency ω to the wave vector k is in the form (Ref 4)

$$\Delta \equiv \det\left[n^2\delta_{ik} - n_i n_k - \varepsilon_{ik}(\omega,k)\right] = 0 \qquad (1.1)$$

Card 1/5

69414

S/141/60/003/01/005/020
E192/E482

Instability of the Magnetically Active Plasma Relative to the High Frequency Electromagnetic Perturbations. Part I

where Δ is the determinant of the third order, δ_{ik} is the Kronecker symbol and $n = kc/\omega$. The tensor ε_{ik} in the relativistic plasma is described by the following expression

$$\varepsilon_{ik}(\omega,k) = \delta_{ik} - \sum i \frac{4\pi e^2 N}{\omega} \int dp \int_0^{\infty} v_i(t) e^{i\omega t - i\int_0^t kv(t')dt'} \times$$

$$\times \left[\left(1 - \frac{kv}{\omega}\right)\frac{\partial f_o}{\partial p_k} \quad \frac{kv_k}{\omega}\frac{\partial f_o}{\partial p}\right] dt \qquad (1.2)$$

where e is the charge of the particles, N is the concentration of the particles, p is the impulse of a

Card 2/5

69414

S/141/60/003/01/005/020
E192/E482

Instability of the Magnetically Active Plasma Relative to the High Frequency Electromagnetic Perturbations. Part I

particle at time $t = 0$, v is the velocity of a particle, $v_1(t)$ represents the velocity of an unperturbed particle in the magnetic field H_o and $f_o(p)$ is the normalized impulse distribution function for the particles. For the case when k is parallel to H, the components of Eq (1.2) can be expressed by Eq (1.3) and (1.4), where ψ is defined in Fig 1, and Ω_H is the gyro-frequency. By substituting Eq (1.3) and (1.4) into Eq (1.2) and integrating it with respect to t the components of the tensor are given by Eq (1.5) (see p 59). If it is assumed that f_o is independent of ψ, the components of the tensor are given by Eq (1.7) and (1.8). The scattering formula for the system is represented by

$$n^2 - \varepsilon_{xx} \pm i\varepsilon_{xy} = 0; \quad \varepsilon_{zz} = 0 \quad (n^2 \equiv c^2k^2/\omega^2) \qquad (1.9)$$

Card 3/5 This can also be written as Eq (1.10) and (1.11). It is

4

69414

S/141/60/003/01/005/020
E192/E482

Instability of the Magnetically Active Plasma Relative to the High Frequency Electromagnetic Perturbations, Part I

further shown that Eq (1.10) can be expressed as Eq (1.12). When the loss of electrons in impulses is zero, the distribution function is in the form of Eq (2.2). The investigation of the instability of plasma amounts to determining the roots of Eq (2.2). However, since this is a fourth-degree equation, its solution is somewhat unwieldy. Consequently, the conditions of instability are investigated for the case when the natural plasma frequency Ω_0 is sufficiently small. Eq (2.2) is, therefore, written as Eq (2.4). When the condition of Eq (2.6) is fulfilled (γ is defined in Eq (2.3)), this expression can be written as Eq (2.7). On the other hand, for the values of k which meet the conditions of Eq (2.8), the scattering formula can be written as Eq (2.9). Further, when the condition of Eq (2.10) is satisfied, Eq (2.9) can be written as Eq (2.11). From this it is seen that the system is unstable, if the condition of Eq (2.12) is fulfilled.

Card 4/5

69414

S/141/60/003/01/005/020
E192/E482

Instability of the Magnetically Active Plasma Relative to the High Frequency Electromagnetic Perturbations. Part I

In the case when the condition of Eq (2.14) is met, Eq (2.9) is written as Eq (2.15), from which it follows that the instability occurs regardless of whether the electrons move with velocities greater or smaller than that of light. Eq (2.4) has a different group of solutions, if it is assumed that the zero approximation for ω is taken from Eq (2.17). It should be pointed out that Eq (2.2) and all the expressions derived from it for γ are relativistic formulae. The author makes acknowledgement to A.V.Gaponov, G.G.Getmantsev and V.O.Rapoport for discussing the results of this work. There are 1 figure and 12 references, 10 of which are Soviet and 2 English.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radio-Physics Institute of Gor'kiy University)

SUBMITTED: November 12, 1959

Card 5/5

06458
SOV/141-1-5-6-2/28

AUTHORS: Ginzburg, V.L. and Zheleznyakov, V.V.

TITLE: On the Mechanisms of Sporadic Solar Radio Emission

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, Vol 1, Nr 5-6, pp 9 - 16 (USSR)

ABSTRACT: This paper was read at the symposium on radio-astronomy during the conference of the International Astronomical Union, which took place in August, 1958 in Moscow. Possible coherent and incoherent mechanisms of sporadic solar radio emission in an isotropic and magneto-active coronal plasma are considered. The problem has been considered by the present authors in Refs 1-3 and the present paper is a summary of the results obtained. types II and III bursts, which are an important part of sporadic solar radio emission, are unpolarized or only weakly polarized. It is suggested that the magnetic field in the region where these bursts are produced is very low (possibly less than 1 Oe). Under these conditions, the plasma may be considered as isotropic in the first approximation. The presence of frequency drift and other properties of types II and III bursts suggests that they are due to particle streams. In an

Card1/4

06458

SOV/141-1-5-6-2/28

On the Mechanisms of Sporadic Solar Radio Emission

isotropic plasma these streams excite only longitudinal waves. The existence in the plasma wave of a longitudinal electric field leads to an instability of the particle stream in the plasma and, as a result, coherent emission of plasma waves takes place. Incoherent and coherent emission of plasma waves takes place simultaneously but they have different frequency and angular spectra and depend on the parameters of the problem in a different way. It is argued that noncoherent emission of plasma waves by particle streams can, in principle, explain the appearance of type III bursts. It is, however, possible that when reabsorption is taken into account in detail, this mechanism may turn out to be unsuitable. Moreover, type II bursts cannot be connected with incoherent emission by particle streams since the particle velocity is not suitable. Coherent emission of plasma waves by particle streams can explain the properties of type III bursts and very probably also type II bursts. Since type I bursts are polarized, the analysis can only be

Card2/4

06458
SOV/141-1-5-6-2/28

On the Mechanisms of Sporadic Solar Radio Emission

carried out by taking the magnetic field into account. In this case, the incoherent emission by particle streams may be divided into Cherenkov radiation and synchrotron radiation. If reabsorption is taken into account it turns out that types I, II and III bursts cannot be associated with synchrotron radiation of electrons. Cherenkov effect cannot explain these bursts either. A charged particle stream moving in a magneto-active plasma is in general unstable and this leads to the coherent emission of ordinary and extraordinary waves. If the magnetic field is weak this coherent emission is practically identical with the coherent emission of plasma waves. In a stronger field (greater than 1 Oe), the coherent radiation leaves the corona predominantly in the form of ordinary waves and hence it can be associated with type I bursts. In order to produce the observed type I bursts, the oscillations in the corona must have an amplitude of about 10 V/cm. How such oscillations are excited is not clear.

Card3/4

06458

SOV/141-1-5-6-2/28

On the Mechanisms of Sporadic Solar Radio Emission

There are 2 figures and 18 references, of which 4 are English and 14 Soviet.

ASSOCIATIONS: Fizicheskiy institut im. P.N. Lebedeva AN SSSR (Physics Institute im. P.N. Lebedev of the Ac.Sc., Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: June 7, 1958

Card 4/4

06460
SOV/141-1-5-6-4/28

AUTHOR: Zheleznyakov, V.V.

TITLE: Non-linear Effects in Magneto-active Plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, Vol 1, Nr 5-6, pp 29 - 33 (USSR)

ABSTRACT: It is known that when an electromagnetic wave of finite amplitude passes through plasma the principle of superposition no longer holds (Ya.L. Al'pert et al - Ref 1). In particular, modulation of wave I can be transferred to wave II. This is due to a change in electron temperature and hence loss in the medium affecting the second wave. In the absence of modulation the electric field of wave I can be represented by Eq (1). The velocity of the forced oscillations of an electron in the field is Eq (3). If the wave is now modulated then the energy imparted to an electron in unit time changes from Eq (2) to (4), hence in a non-relativistic plasma the work done on an electron is proportional to the effective number of collisions. According to the theory of cross-modulation (Refs 1-4) in the case of molecular collisions the time-dependent part of the number of collisions is related to the energy of

Card1/3

06460

interaction by Eq (5). The amplitude of an elementary component of wave II after traversing the interaction region is Eq (6). In the expression for energy four terms arise which are proportional to the quantities (7) and (8). Upon integration (6), a second pair of terms vanishes; the other two depend separately on the ordinary and extraordinary components of wave I. For one component the energy imparted to an electron in unit time is Eq (9), where the Poynting vector is Eq (10) and the absorption coefficient is Eq (11). The transfer will be greatest at a frequency satisfying Eq (12). This frequency is not the same as the gyro-frequency unless the wave is propagated in a particular direction ($\alpha = 0$) . Conclusions regarding "resonance" effects in the plasma are only true if elliptical polarisation is neglected. As an example the case of the extraordinary wave, propagated at angle $\alpha = 90^\circ$, is considered. The mean imparted energy is given by Eq (14); this formula only takes on its conventional form if linear polarisation is assumed. Eq (14) also enables some conclusions to be drawn about the frequency dependence of cross-modulation in that particular case.

06460

Non-linear Effects in Magneto-active Plasma SOV/141-1-5-6-4/28

Extension to the more general case is not difficult - the conclusions drawn in the paper hardly shift the position of the maximum of the resonance curve - but only affect the dependence of cross-modulation on ω_1 at the sides of the resonance curve. A.V. Gurevich is thanked for assistance. There are 8 references, of which 6 are Soviet and 2 English.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Research Institute of Gor'kiy University)

SUBMITTED: October 23, 1958

Card 3/3

06331

AUTHOR: Zheleznyakov, V. V. SOV/141-2-1-3/19

TITLE: On the Synchrotron Radiation and the Instability of a System of Charged Particles in a Plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 1, pp 14-27 (USSR)

ABSTRACT: In the analysis of problems connected with the emission, absorption and intensification of waves in particle streams, the quantum approach is very fruitful even when the problem appears to be essentially classical. As an example, it is pointed out that in the anomalous Doppler effect the radiating system (electron in a magnetic field, atom, etc) experiences a transition to a higher energy level. The quantum derivation of the condition for instability for a stream of charged particles in an isotropic plasma is much simpler and more descriptive than the classical derivation. The present paper is concerned with the discussion of other results of this type connected with the synchrotron radiation and instability of a system of charged particles in a plasma. The paper is divided into the following sections:

Card1/4 1) Some properties of synchrotron radiation from an electron

06331
SOV/141-2-1-3/19

On the Synchrotron Radiation and the Instability of a System of Charged Particles in a Plasma

in a plasma. It is shown (using the quantum approach) that an electron moving in a magneto-active plasma does not radiate in the direction of the magnetic field in the region corresponding to the anomalous Doppler effect. Conversely, the ordinary radiation which accompanies the anomalous Doppler effect may take place in the direction $\alpha = 0$ (α is the angle between the momentum of a photon and the direction of the constant magnetic field H_0) if the electron moving in the magnetic field is surrounded by a medium whose refractive index m_j is greater than unity (for ordinary waves).

2) Synchrotron radiation of a system of charged particles. In this section formulae are derived for the intensity of the radiation from a thick layer in which the electron momentum distribution is axially symmetric relative to the direction of the magnetic field (Eq 2.11) and for the effective temperature (Eq 2.12).

Card2/4

06331
SOV/141-2-1-3/19

On the Synchrotron Radiation and the Instability of a System of Charged Particles in a Plasma

3) Intensification of electromagnetic waves and the instability of a system of charged particles (quantum approach). In this section the result is discussed that, in the motion of a stream of charged particles (electrons) in a plasma, the absorption coefficient of a system may become negative under certain conditions. A detailed discussion is given also of the conditions for intensification and instability.
4) Intensification of electromagnetic waves and the instability of a system of charged particles (classical approach). It is shown that the results obtained by the quantum approach in the previous section can also be obtained classically. A comparison of the quantum and classical methods of studying the intensification and instability of charged particle systems shows that the former has very real advantages over the latter. The classical approach cannot always be used without serious computational difficulties. One of the disadvantages of the quantum approach is that it cannot be used to study systems under conditions of strong absorption or large intensification while the classical approach is free from this limitation. The Einstein quantum theory, which is used throughout this paper, is also limited by the

Card3/4

06331

SOV/141-2-1-3/19

On the Synchrotron Radiation and the Instability of a System of Charged Particles in a Plasma

requirement that the initial state of the system must be incoherent. The criteria for intensification and instability obtained in the present paper are directly applicable only to the case of a uniform, infinite system. Acknowledgments are made to V. L. Ginzburg and V. M. Fain for a discussion of the results. There are 19 references, of which 18 are Soviet and 1 is English.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Research Radio-Physical Institute of Gor'kiy University)

SUBMITTED: November 5, 1958.

Card 4/4

ZHELEZNYAKOV, V.V.

Magnetic bremsstrahlung and instability of a system of charged particles in a plasma. Izv.vys.ucheb.zav.; radiofiz. 2 no.1: 14-27 '59. (MIRA 12:10)

1. Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Bremsstrahlung) (Plasma(Ionized gases))

06487
SOV/141-58-4-3/26

AUTHOR: Zheleznyakov, V.V.

TITLE: On the Interaction of Electric Waves in the Plasma. I (O vzaimodeystvii elektromagnitnykh voln v plazme.I)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, Nr 4, pp 32-45 (USSR)

ABSTRACT: The method of phase integrals is used to consider the interaction of normal waves in a non-uniform magneto-active plasma taking into account the thermal motion of the electrons in the quasi-hydrodynamic approximation. Relations are obtained between the coefficients of the asymptotic solution on either side of the interaction region both in the case $\omega_H/\omega<1$ and $\omega_H/\omega>1$ where ω_H is the gyrofrequency (eH_0/mc). It is shown that when the properties of the medium vary sufficiently slowly, the propagation of electromagnetic waves may be described in terms of the geometrical optics approximation. In this approximation, normal waves of different types, and also waves of a given type but propagated in different directions, are independent. However, in the region where the geometrical optics approximation does not hold,

Card 1/3

06487

SOV/141-58-4-3/26

On the Interaction of Electric Waves in the Plasma. I

interaction between waves takes place. This occurs when the dispersion relation (1.23) has roots n_j^2 such that one of them is close to zero or $n_j^2 \simeq n_i^2$ for two normal waves. Such an interaction consists in that the passage of the j-th wave through the region where the asymptotic solution 1.21 does not hold is accompanied by a reflected wave of the same type ($n_j^2 \sim 0$) or the appearance of a new wave of another type ($n_j^2 = n_i^2$).

A general discussion is given of the interaction of normal waves and it is shown that the interaction between waves I and II can be neglected on account of absorption (Eq 1.23, 1.25 and 1.27 define the wave types) and only the interaction between waves II and III need be considered $(u = \omega_H^2/\omega < 1)$. The problem is solved in principle for a plain layered magneto-active plasma.

Card 2/3

06487

On the Interaction of Electric Waves in the Plasma. I SOV/141-58-4-3/26

Numerical calculations will be given in a subsequent paper. N.G. Denisov is thanked for valuable suggestions. There are 3 figures and 12 references, 8 of which are Soviet.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysical Research Institute of the Gor'kiy University)

SUBMITTED: 18th April 1958

Card 3/3

GINZBURG, V.L.; ZHELEZNYAKOV, V.V.

[redacted]

Mechanism of sporadic solar radiations. Izv. vys. ucheb. zav.; radiofiz. 1 no.5/6:9-16 '58. (MIRA 12:8)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR i Gor'kovskiy gosudarstvennyy universitet.

(Solar radiation)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

ZHELEZNYAKOV, V.V.

Nonlinear effects in magnetically active plasmas. Izv. vys. ucheb. zav.; radiofiz. 1 no.5/6:29-33 '58. (MIRA 12:8)

1. Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

(Gases, Ionized)

SUBMITTED: December 7, 1957

SOV/109-3-3-22/23

AUTHORS: Golubkov, P.V. and Tsimring, Sh. Ye.

TITLE: The Second All-Union Conference on Radioelectronics of the Ministry of Higher Education of the USSR (Vtoraya vsesoyuznaya konferentsiya MVO SSSR po radioelektronike) - News Item

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 3, pp 440 - 444 (USSR)

ABSTRACT: The conference took place during September 23 - 29, 1957, at Saratovskiy gosudarstvennyy universitet imeni N.G. Chernyshevskogo (Saratov State University imeni N.G. Chernyshevskiy). Apart from the universities, the conference was attended by the representatives of some scientific research institutes of the Soviet and Ukrainian Academies of Science, various industrial establishments and the interested ministries. This arrangement stimulated the discussion and evaluation of the papers presented and permitted the determination of plans for the future research to be carried out by the universities in the field of radioelectronics.

Card1/16

The paper by V.V. Zheleznyakov, in which the author suggested a hypothesis concerning the origin of the sporadic radiation of Jupiter, aroused a considerable interest and lively discussion. According to the hypothesis, the bursts of the radiation from Jupiter are due to the plasma oscillations in its ionosphere. The author found a close correspondence between the parameters of the ionosphere of Jupiter and those of the layer F_2 of the Earth ionosphere.

Card10/16

The paper contained also a hypothesis dealing with the analogous mechanism of the recently discovered sporadic radiation of Venus. The work of G.G. Getmantsev entitled: "The Theory of Magnetic Braking Mechanism of the Non-thermal Cosmic radiowave Radiation" eliminates the theoretical difficulties which are encountered when an attempt is made to consider the galactic plane as being the source of cosmic electrons. The author considered that the electrons are formed as a result of non-elastic collisions between the relativistic protons of the inter-stellar medium. I.G. Moiseyev described a 10-cm radio telescope, having a mobile (vibrating) directional pattern. The movement of the pattern is secured by periodically switching the input of the receiver from one antenna radiator to another, the radiators being situated in the vicinity of the focus of a parabolic reflector. G.G. Getmantsev described a simple modulator (switch) which was constructed for the above equipment at the Gor'kiy University by N.N. Kholodilov and A.V. Zakharov. The Radiowave Propagation Section had nine papers and communications. The paper by B.N.Gershman

Card11/16

entitled "The Theory of Large-scale Non-uniformities" proposed a theory analogous to that of the cellular Martin waves, which also took into account the effect of the magnetic field of the Earth. N.G. Denisov gave a theoretical analysis of the propagation of radiowaves through that region of the non-uniform magnetically-active plasma in which a partial absorption of the electro-magnetic waves takes place due to the vicinity of the frequency of the external field and the natural frequency of the plasma. The author calculated the reflection coefficients and the propagation and absorption coefficients of the extraordinary wave for the transverse propagation and investigated the absorption of the ordinary and the extraordinary waves for the quasi-longitudinal propagation. The influence of the solar activity on the ionosphere was investigated in the papers by N.I.Yeryushev and N.A. Savich. [redacted]

3(1)

AUTHORS: Ginzburg, V.L., Zheleznyakov, V.V. SOV/33-36-2-5/27

TITLE: On the Propagation of Electromagnetic Waves in the Solar Corona Taking Into Account the Influence of the Magnetic Field

PERIODICAL: Astronomicheskiy zhurnal,1959,Vol 36,Nr 2,pp 233-246 (USSR)

ABSTRACT: The present note has preparatory character. In a following article the authors intend to investigate the influence of the magnetic field of the corona on the sporadic solar radiation. In this connection the influence of the magnetic field on the propagation and emission of the electromagnetic waves of the corona is considered as a preparation. The authors compile well-known results of western and Soviet scientists and complete them in a form necessary for the following article. In particular they consider the emission from the corona caused by the interaction of normal waves and caused by their dispersion on the fluctuations of the electron density ; conditions of emission are given. Furthermore the authors describe the propagation of the electromagnetic waves in the corona under the influence of a strong sunspot magnetic field.

Card 1/2

On the Propagation of Electromagnetic Waves in the Solar Corona Taking Into Account the Influence of the Magnetic Field SOV/33-36-2-5/27

N.A. Mityakov is mentioned in the paper.
There are 5 figures, and 14 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy in-t pri Gor'kovskom universitete (Scientific Research Institute of Radiophysics at Gor'kiy University)

SUBMITTED: August 29, 1958

Card 2/2

ZHELEZNYAKOV, V.V.

Interaction of electromagnetic waves in plasma. Part 1. Izv. vys.ucheb.zav.; radiofiz. 1 no.4:32-45 '58. (MIRA 12:5)

1. Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

(Radio waves)

GINZBURG, V.L.; ZHELEZNYAKOV, V.V.

Absorption and radiation of electromagnetic waves by a magnetically active plasma. Izv.vys.ucheb.zav.; radiofiz. 1 no.2:59-65 '58. (MIRA 11:11)

1. Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

(Radio waves)

3(1)

AUTHOR: Zheleznyakov, V.V. SOV/33-35-2-7/21

TITLE: On the Theory of the Sporadic Radio Emission of Jupiter (K teorii sporadicheskogo radioizlucheniya Yupitera)

PERIODICAL: Astronomicheskiy zhurnal, 1958, Vol 35, Nr 2, pp 230-240 (USSR)

ABSTRACT: The author discusses the following hypothesis on the origin of the sporadic radio emission of Jupiter, where he mentions the papers of Shain [Ref 6,8] and Landau [Ref 10]: The bursts of emission are caused by plasma oscillations in the ionosphere of the planet. The principal peculiarities of the emission of Jupiter can be explained by this theory and furthermore numerical data on the physical conditions in the ionosphere of Jupiter can be derived from it. According to this the author states that the ionosphere of Jupiter is similar to the F_2 layer of the ionosphere of the Earth.

Possibly the sporadic radio emission of Venus found by Kraus [Ref 18,19] is also caused by plasma oscillations in the

Card 1/2

On the Theory of the Sporadic Radio Emission of Jupiter SOV/33-35-2-7/21

ionosphere of Venus. The author thanks Professor V.L.Ginzburg for the revision of the paper.
There are 2 figures, and 21 references, 8 of which are Soviet, 10 American, 2 Australian, and 1 English.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta imeni N.I. Lobachevskogo (Radiophysical Institute of the Gor'kiy State University imeni N.I. Lobachevskiy)

SUBMITTED: May 4, 1957

3(1)

AUTHORS: Ginzburg, V.L., and Zheleznyakov, V.V. SOV/33-35-5-3/20

TITLE: On the Possible Mechanisms of Sporadic Solar Radio Emission (Radiation in Isotropic Plasma) (O vozmozhnykh mekhanizmakh sporadicheskogo radioizlucheniya solntsa (izlucheniye v izotropnoy plazme))

PERIODICAL: Astronomicheskiy zhurnal, 1958, Vol 35, Nr 5, pp 694-712 (USSR)

ABSTRACT: The authors discuss the coherent and incoherent mechanisms of sporadic solar radio emission in isotropic coronal plasma. They show that it is impossible or improbable to combine type II bursts and type III bursts with an incoherent plasma mechanism of radio emission, while the description by coherent plasma mechanisms leads to no contradiction. Because of polarization the consideration of type I bursts related to sunspots by isotropic plasma only is senseless. In a following note the case of magnetoactive plasma shall be considered. About the contents of both notes it was partly reported on November 27, 1957 at the Radioastronomical Committee of the Astronomical Assembly of the Academy of Sciences of the USSR. It is mentioned in a footnote that, according to a remark of D.A.Frank-Kamentskiy, the question

3

On the Possible Mechanisms of Sporadic Solar Radio Emission (Radiation in Isotropic Plasma) SOV/33-35-5-3/20

whether the transition of plasma waves into electromagnetic waves is essential for the dispersion of plasma waves at coronal electrons is investigated by A.A.Vedenov and R.Z.Sagdeyev. There is 1 figure, and 17 references, 13 of which are Soviet, 2 American, 1 Australian, and 1 German.

ASSOCIATION: Fizicheskiy institut imeni P.N.Lebedeva Akademii nauk SSSR (Physical Institute imeni P.N.Lebedev of the AS USSR) Radiofizicheskiy institut pri Gor'kovskom universitete imeni N.I.Lobachevskogo (Radiophysical Institute at the Gor'kiy University imeni N.I.Lobachevskiy)

SUBMITTED: April 23, 1958

Card 2/2

GINZBURG, V.L.; ZHELEZNYAKOV, V.V.

Possible mechanisms of sporadic solar radio emissions (radiation in isotropic plasma) [with summary in English]. Astron.zhur. 35 no.5:694-712 S-O '58. (MIRA 11:11)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR i Radiofizicheskiy institut pri Gor'kovskom univeristeta imeni N.I. Lobachevskogo.

(Solar radiation) (Radio astronomy)

PISHKIN, B.A. [Pyshkin, B.A.], otv.red.; TYULENEV, M.O. [Tiuleniev, M.O.], red.; ARISTOVSKIY, V.V. [Aristovs'kyi, V.V.], doktor tekhn.nauk, red.; ALPAT'YEV, S.M. [Alpat'iev, S.M.], kand. sel'skokhoz.nauk, red.; ZHELEZNYAK, I.A. [Zheliezniak, I.A.], kand.tekhn.nauk, red.; MAKSIMCHUK, V.L. [Maksymchuk, V.L.], kand.tekhn.nauk, red.; SEMENOV, K.S., kand.tekhn.nauk, red.; PECHKOVSKAYA, O.M. [Piechkovs'ka, O.M.], red.izd-va; KADASHEVICH, O.O., tekhn.red.

[Over-all utilization of Ukrainian water resources; collected studies] Kompleksne vykorystannia vodnykh resursiv Ukrainy; sbirnyk naukovykh prats'. Kyiv, 1959. 173 p. (MIRA 13:1)

1. Akademiia nauk URSR, Kiev. Rada po vyvchenniu produktyvnykh syl URSR. 2. Chlen-korespondent AN URSR; golova Komisii po problemi kompleksnogo vikoristannya vodnikh resursiv URSR, Rada po vivchennyu produktivnikh sil URSR Akademii nauk URSR (for Pishkin). 3. Chlen-korespondent AN URSR; Ukrains'kiy naukovo-doslidniy institut gidrotekhniki ta melioratsii (for Tyulenev). 4. Institut gidrologii i gidrotekhniki AN URSR (for Zheleznyak, Maksimchuk, Pishkin).
(Ukraine--Water resources development)

ZHELEZNYAKOV, Yu

"We ask the Administration of the Rural Consumers' Society to express gratitutde to..." Obshchestv.pit. no.9:39-40 S '60. (MIRA 13:11)

1. Nachal'nik otdela obshchestvennogo pitaniya Ul'yanovskogo oblpotrebsoyuza.
(Nikol'skoye (Ul'yanovsk Province)--Restaurants, lunchrooms, etc.)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

RAUZIN, Ya.R.; ZHELEZNYAKOVA, A.R.

Effect of grain size on the initial stage of plastic deformations of polycrystalline metals. Part 2. Iron. Fiz.met.i metalloved. 3 no.1:154-161 '56. (MLRA 9:11)
(Deformations (Mechanics)) (Iron--Metallography)

Zheleznyakova, A. R.

129-12-6/11

AUTHORS: Rauzin, Ya. R., Candidate of Technical Sciences and Zheleznyakova, A. R., Engineer.

TITLE: Nature of the critical degree of deformation. (Priroda kriticheskoy stepeni deformatsii).

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1957, No.12, pp.41-48 (USSR)

ABSTRACT: In earlier investigations of the recrystallisation of the steel ШХ15 the authors observed merging of grains after small degrees of deformation in the hot state and on the basis of these observations they formulated a hypothesis that only selective recrystallisation takes place in the critical range of deformation. In this paper the authors investigated recrystallisation after small plastic deformations of aluminium of various degrees of purity for differing initial grain sizes from a monocrystal onwards down to a fine grain of 0.06 mm size. The starting material consisted of aluminium wire of two differing degrees of purity (99.46% Al, 0.14% Fe, 0.25% Si, 0.15% other admixtures; and 99.90% Al, 0.02% Fe, 0.04% Si, 0.04% other admixtures). By annealing at various temperatures specimens with differing grain sizes were produced from this material. Deformation was effected by

Card 1/5

Nature of the critical degree of deformation. 129-12-6/11

uniaxial tension on 2 x 3 x 20 mm specimens. All the specimens were electrically polished and then stretched to various degrees of deformation with elongations up to 20%. Appearance of sliding lines was observed microscopically on the polished surface and also the formation and growth of grains during subsequent recrystallisation. Fig.1 shows photos of the first visible traces of sliding in a monocrystal and a polycrystal; Fig.2 shows the crystallographic orientation of a monocrystal respectively after deformation by 14% and deformation by 14% followed by annealing at 400°C; the graphs, Fig.3, show the degree of deformation at which sliding lines appear; the graph, Fig.4, gives the recrystallisation curves for aluminium with initial grain sizes of 0.8 and 0.06 mm respectively; the graph, Fig.8, shows the recrystallisation curve after slow deformation at 140°C at a rate of 1% per 10 hours, annealing temperature of 600°C and initial grain diameter of 0.06 mm. The same graph also shows a recrystallisation curve after usual deformation speeds. On the basis of their experimental results, the authors arrived at the following conclusions: existence of a critical degree

Card 2/5

of deformation and of an intensive grain growth during annealing can be elucidated on the basis of the following conceptions relating to the mechanism of the initial stage of deformation. The initial stage of plastic deformation of polycrystalline metals, particularly of aluminium, are characterized by inter-granular displacement. Whether during this displacement any intra-granular processes take place cannot be said for the time being, since it was only established that no sliding processes take place during this displacement. Only after reaching a certain limit do the inter-granular displacements change into sliding deformation which comply with the well known relations. In the case of purer metals and also with increasing grain sizes, the inter-granular displacement changes into intragranular (sliding) at lower degrees of deformation. With slowing down deformation, this boundary shifts appreciably towards large degrees of deformation. Displacement of the grains, which is accompanied by their getting nearer and by densification of the transient layer without distorting appreciably the atomic packing, will lead at a

Nature of the critical degree of deformation. 129-12-6/11

certain stage to intensive grain growth during subsequent annealing; this stage is the critical deformation at which a transition begins from selective recrystallisation to treatment recrystallisation which approaches the boundary of transition from intergranular to sliding displacement. At low deformation speeds (creep) an interval of critical deformation is observed; the two limits of the critical deformation, i.e. formation of a closed contact of the grains and subsequent hardening of the transient layer and wedging of the grain can be ordinated as follows: the first corresponds to the beginning of the interval of critical deformation, whilst the second corresponds to the end of this interval. The wedging of the grains and the accompanying initial sliding deformation is accompanied by intensive distortions primarily in the transient layer along the grain boundaries which becomes sources of formation of new grains during subsequent heating and recrystallisation can already be observed. The described mechanism of the initial stage of deformation explains why new grains during recrystallisation form primarily along the grain boundaries. Other relations also become understandable, particularly, the

Card 4/5 strong dependence of the size of the recrystallised

Nature of the critical degree of deformation. 129-12-6/11

grain on the initial one and the shift in the recrystallisation peak, i.e. of the critical degree of deformation, towards small deformation values with a coarsening of the initial grain.
There are 8 figures and 7 references, 5 of which are Slavic.

AVAILABLE: Library of Congress.

Card 5/5

ZVYAGINTSEV, A.Ye., dotsent; ZHELEZNYAKOVA, F.I.; GADZHIMIRZAYEV, G.A.

Surgical treatment of hypospadias in children. Urologiia 29 no.3:3-6 My-Je '64. (MIRA 18:10)

1. Klinika detskoy khirurgii (zav.- prof. I.K. Murashov) II Moskovskogo meditsinskogo instituta imeni Pirogova.

ZHELEZNYAKOVA, M.A.; KLYUYEVA, Ye.P.; STREL'TSOV, N.N., red.; PANCHENKO, M.F., red.izd-va; NAZAROVA, A.S., tekhn.red.

[Operation of gas systems of communal enterprises] Ekspluatatsiia gazovogo khoziaistva kommunal'nykh predpriiatii. Izd.2. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1960. 219 p. (MIRA 13:12)

(Gas distribution) (Gas appliances)

TIL'TIN, G.K., inzh.; ZHELEZNYAKOVA, M.A., inzh.

Observe safety standards in constructing a gas system. Bezop.truda v prom. 3 no.10:18-19 O '59. (MIRA 13:2)

(Gas companies--Safety measures)

ZHELEZNYAKOVA, M.A.; KLYUYEVA, Ya.P.; STREL'TSOV, N.N., redaktor; AKATOVA, V.G., redaktor; KONYASHINA, tekhnicheskiy redaktor

[Construction and operation of gas equipment in public enterprises] Ustroistvo i ekspluatatsiia gazovogo khoziaistva kommunal'nykh predrpiiatii. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1955. 218 p. (MIRA 8:10)
(Gas distribution)

ZHELEZNYAKOVA, M.A., inzh.

Tighten the control over underground gas pipelines. Bezop.truda v prom. 9 no.4:21-24 Ap '65. (MIRA 18:5)

1. Gosudarstvennyy komitet pri Sovete Ministrov RSFSR po nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i gornomu nadzoru.

ZHELEZNYAKOVA, M.A., inzh.

New safety regulations for gas distribution. Bezop.truda v prom. 5 no.9:37-38 S '61. (MIRA 14:10)
(Gas distribution--Safety measures)

GALANOV, I.G., otv. red.; MATLAKHOV, S.G., otv. red.; POLESIN, Ya.L., red.; BOGOMOLOV, A.I., red.; ZHELEZNYAKOVA, M.A., red.; ZHIDOVETSKIY, B.V., red.; ZIL'BERSHTEYN, I.A., red.; KANER, I.Ye., red.; KLYUYEVA, Ye.P., red.; KOZLOVA, Ye.I., red.; MAKAROV, A.D., red.; SAMARTSEV, A.I., red.; SOLOPKO, A.P., red.; TIKHONOV, V.A., red.; VOLKOVA, V.A., ved. red.

[Safety regulations in the gas industry; regulations obligatory for all ministries, departments, and organizations] Pravila bezopasnosti v gazovom khoziaistve; pravila obiazatel'ny dlia vsekh ministerstv, vedomstv i organizatsii. Perer. i dop. izd. Moskva, Nedra, 1965. 143 p. (MIRA 18:3)

1. Russia (1917- R.S.F.S.R.) Gosudarstvennyy komitet po nadzoru za bezopasnym vedeniem rabot v promyshlennosti i gornomu nadzoru.

CA ZHELEZNYAKOVA, N.S. 11E

Hourly elimination of ascorbic acid in the urine as an index of the level of saturation of the organism. N. S. Zheleznyakova (Odessa Med. Inst.). *Gigiena i Sanit.* 1951, No. 12, 11-5.—The ratio mg. ascorbic acid eliminated in urine divided by time (in hrs.) does not depend per se on the amt. of diuresis as the concn. of ascorbic acid varies with diuresis. However, the above ratio is directly proportional to the mg. % of ascorbic acid in the blood. The hourly elimination figure can be used as a convenient index of the approach of the organism to satisfaction of its requirements for the vitamin. For children 4-7 years old the value is 0.5 (av.), for 8-13-year-olds it is 0.7, for older people 0.8. O. M. Kondapoff

CA

9

Change of the physical properties and structures of an-
nealed hypereutectoid steels as the basis of magnetic
methods of control. Ya. R. Rauzin and Sh. R. Zhelez-
nyakova. *Zavodskaya Lab.* 14, 817-21(1948).—The de-
pendence of the magnetic properties of annealed Cr-C
steel (Sh kh 15) on the size, form, and distribution of car-
bides and on the ferrite grain size was studied in order to
be able to use magnetic properties in controlling the an-
nealing of this steel. The specimens were 6 mm. in diam.
and 215 mm. long and were made of steel contg. C 1.02,
Cr 1.48, Mn 0.36, Si 0.28%. They were normalized at
980° and cooled rapidly enough to prevent the formation
of a carbide network. Various structures such as lamellar
and granular pearlite and network carbide were obtained
by further heat-treatment. The magnetic properties
were detd. by the ballistic method with a max. field of 600
oersteds. The coercive force doubled as the no. of car-
bide particles increased from about 400 × 10^6 to 2000 ×
10^6 per cu. mm. A linear relation between Brinnel hard-
ness, and permeability or coercive force was found regard-
less of the presence of a carbide network. Fine-grained
ferrite produced about 10% higher coercive force and hard-
ness and lower permeability than did a coarse-grained
structure. Total carbide surface was also almost linearly
related to hardness and the two magnetic properties.
When fine pearlite of a normalized steel was coarsened by
slow cooling from above 780°, the coercive force was de-
creased by about 50% and the permeability was increased
by about a factor of 3. A. G. Guy

Cent Inst. of the Bearing Industry

RAUZIN, Ya. R., ZHELEZNYAKOVA, Sh. R.

Steel

One method of aging hardened steel. Vest. mash. 31, No. 11, 1951.

Monthly List of Russian Accessions, Library of Congress, September 1952 UNCLASSIFIED.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

Zheleznyakova, Sh.R

110-12-14/19

AUTHOR: Zheleznyakova, Sh.R., and Tishkina, A.S., Engineers.

TITLE: Heat-resisting Materials Used in Electric Furnaces and their Properties (Zharoprochnyye materialy, primenyayemyye v elektropechakh i ikh svoystva)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.12, pp. 49 - 54 (USSR).

ABSTRACT: The scientific research department of the design office of the Elektropech' Trust has studied the heat-resistance of steels and alloys for electric furnaces. The tests were made on formed and on cast materials.
The heat-resistances were tested on machines types ВП-8 ВИАМ using standard procedure. The test duration was 500 hours. The creep-testing machines were specially developed by the department with the active participation of: Candidate of Technical Sciences Ya.R. Radzin, Engineer K.P. Sukhanov and Engineer E.N. Marmer. Four specimens were creep-tested simultaneously for periods of 1 000 - 2 000 hours, at the same temperature but under different stresses. A series of primary creep curves were then constructed. Within the region of steady creep, the data of the primary curves was used to determine total strains of 0.5, 1, 2 and 3%, which were plotted on log/log paper with time on the abscissus and the stress on the ordinate,

Card1/5

forming a straight line which could be extrapolated to the full life of the part.

The different steels tested are described below; all except the first were heat-treated: steel 1X18H9T (ЭЯ1Т) is widely used for furnace parts operating at temperatures of up to 800 °C; it is of the austenitic-ferritic class with the properties and test results shown in Table 1. Creep tests were made at temperatures from 600 - 750 °C. By extrapolating the curves of Fig.1 to 10 000 hours, the creep limits given in Table 2 emerged.

Steel X23H18 (ЭИ-417) is of the austenitic class and is heat-resistant up to 1 000 °C; its physical, mechanical and heat-resisting properties are given in Table 3. Specimens that had been heat-treated at a temperature of 1 150 °C were tested for creep at temperatures between 700 - 1 000 °C. The uniform rate of creep was approximately up to 3%. Stress/time curves are given in Fig.2 and creep limits for 10 000 hours stress in Table 4.

Steel X18H25C2 (ЭЯ-3С) is of the austenitic class. At temperatures above 1 000 °C the carbide phase begins to dissolve, and it is almost completely dissolved at 1 200 °C, at which temperature

Card2/5

there is a great increase in grain size. The properties of the steel at different temperatures are given in Table 5. The specimens tested were heat-treated at a temperature of 1 200 °C. Creep tests were made at temperatures of 875 and 1 100 °C. Uniform rate of creep was only observed up to 2% strain. Stress/time curves are given in Fig.3 and the creep limits and long-term strength in Table 6.

Alloy X20H80T3A (ЭИ-437А) was considered as being a more heat-resisting material for creep-testing. This alloy when hardened at high temperature is an unsaturated solid solution which on repeated heating breaks down with the formation of a second phase which strengthens the alloy. The material was heat-treated at a temperature of about 1 100 °C. Creep tests were carried out at temperatures from 875 - 1 100 °C. A uniform rate of creep occurs up to about 3% strain. The stress/time test results are given in Fig.4 and creep limits and long-term strength in Table 7.

Alloy X20H80T (ЭИ-435) is plastic in the hardened condition and makes good stampings. Its structure is austenitic with carbide. The specimens were heat-treated at 1 100 °C. Creep tests were made at temperatures from 875 - 1 100 °C. The test results and

Card3/5

creep limits are given in Fig.5 and Table 8.
Cast steel X25H11 (ЭИ-316) is widely used for furnace parts operating at temperatures around 1 100 °C. Its structure is austenitic with carbides. It is convenient to cast, weld and work mechanically. Published data on its mechanical properties are not available. Creep tests were made at temperatures of 700 - 1 000 °C on specimens cut from cast rails. The specimens broke at strains of 3 - 4%; hence, creep limits up to 1% only were used. The stress/time relationships are given in Fig.6, and the creep limit and long-term strength in Table 9.
The following conclusions are drawn from the work: alloy X20H80T3A hardened from 1 100 °C has good resistance up to 900 °C and is heat-stable to 1 100 °C. It is recommended for highly-stressed parts when other steels have a short life. Because of its cost it should not be used at temperatures above 900 °C, where cheaper steels are equally suitable. Alloy X20H80T, even after heat-treatment, has equal or worse heat-resisting properties at all temperatures than other steels tested and its use is not recommended. Steel X23H18 is heat-stable up to 1 000 °C and is of satisfactory resistance at this temperature, up to which it

Card4/5

110-12-14/19

Heat-resisting Materials Used in Electric Furnaces and their Properties.

may be used. Steel X18H25C2 is heat-stable up to 1 100 °C; at temperatures above 900 °C its heat-resistant properties resemble those of alloy X20H80T3A and it is, therefore, appropriate for temperatures up to 1 100 °C. Cast steel ЭИ316 has good heat-resistant properties, is heat-stable up to 1 100 °C, and can be used for cast parts up to this temperature. Steel 1X18H9T is heat-stable up to 800 °C and may be used for parts operating up to this temperature.
There are 6 figures, 9 tables and 4 references, 2 of which are Slavic.

ASSOCIATION: Design Office of the Elektropech' Trust (OKB Tresta "Elektropech'")

SUBMITTED: February 14, 1957.

AVAILABLE: Library of Congress

Card 5/5

L 41002-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/WB

ACC NR: AR6014386 (A,N) SOURCE CODE: UR/0137/65/000/011/I071/I071

AUTHORS: Zheleznyakova, Sh. R.; Zakatova, N. A.; Eyfer, M. Yu.; Shar, N. F. 68

TITLE: The behavior of high-temperature and scale-resistant steels and alloys in an endothermic atmosphere with different carbon potentials B

SOURCE: Ref. zh. Metallurgiya, Abs. 11I501

REF SOURCE: Tr. Vses. n.-i. in-ta elektroterm. oborud., vyp. 1, 1965, 224-235

TOPIC TAGS: steel, alloy steel, Kh25N20S2 steel, Kh25 steel heat resistant steel, endothermic effect, gas corrosion, metal oxidation, corrosion resistance

ABSTRACT: Fourteen types of Cr-, Cr-Ni-, and Fe-Cr-Al steels and alloys were investigated. The endothermic atmosphere had a carbon potential 0.3--0.4% C and 0.8--0.9% C. The experimental temperature was 1050C, the duration of experiments was 100, 300, 500, 700, and 1000 hours. The furnace pressure was 10--15 mm H_2O. The flow rate was 350 liter/hr. The overall depth of gaseous corrosion was determined in terms of the sum of the surface and intercrystalline corrosion. The oxidation curves are compared with the oxidation in air; the carbon potential of the latter is assumed to be 0% C. All steels and alloys investigated were subject to surface oxidation; many carbonized, and steel Kh25N20S2 showed intercrystalline corrosion. Scale resistance of the investigated materials in an atmosphere of carbon potential 0.3--0.4 % C for short exposure is better and for long exposures worse than in an atmosphere of endogas with a carbon potential of 0.8--0.9 % C. For all exposures

Card 1/2 UDC: 669.15.018.85:620.193

ACC NR: AR6014386

(for steel Kh25 after 10 000 hr), the scale resistance in endogas is better than in air. Recommendations for the use of the investigated materials for parts and the construction of electrical furnaces are presented. I. Strebkov [Translation of abstract]

SUB CODE: 11

Card 2/2

L 43091-66 EWT(m)/EWP(t)/ETI IJP(c) JD/WB

ACC NR: AR6014387 (A,N) SOURCE CODE: UR/0137/65/000/011/I073/I073

47 B

AUTHORS: Zheleznyakova, Sh. R.; Shur, N. F.

TITLE: Influence of elongation stresses on the oxidation of high-temperature steels

SOURCE: Ref. zh. Metallurgiya, Abs. 11I511

REF SOURCE: Tr. Vses. n.-i. in-ta elektroterm. oborud., vyp. 1, 1965, 235-239

TOPIC TAGS: austenite steel, high temperature oxidation, tensile stress, alloy steel / KhN77TYuR alloy steel, 1Kh25N25TR austenite steel, Kh23N18 austenite steel

ABSTRACT: The alloys KhN77TYuR (EI 427B) and the austenitic steels 1Kh25N25TR (EI 813) and Kh23N18 (EI417) were investigated. Cylindrical specimens, 10 mm in diameter and 150 mm long, were investigated for 145 hours at 1100C under a load of 0—0.5 kg/mm². It was found that surface oxidation increases linearly with increase in tension. The following formula is proposed for the calculation of the approximate weight loss of metal during oxidation working under a load of P_1 (kg/mm^2). $P_1 = P_0 + 1000$ kv where P_0 is the weight loss for $\sigma = 0$ kg/mm^2;

Card 1/2 UDC: 669.15.018.45

Card 2/2

ACC NR: AR7004868 SOURCE CODE: UR/0137/66/000/010/I093/I093

AUTHOR: Epshteyn, I. A.; Zheleznyakova, Sh. R.; Barkaya, D. S.

TITLE: EP548 alloy for electric-furnace heating elements

SOURCE: Ref. zh. Metallurgiya, Abs. 10I653

REF SOURCE: Elektrotermiya. Nauchno-tekhn. sb., vyp. 50, 1966, 37-40

TOPIC TAGS: heat treating furnace, electric wire, heating element, furnace heating element, alloy/EP548 alloy

ABSTRACT: It has been established that the experimental EP548 alloy is more resistant to scaling than is the Kh20N80 alloy. No intercrystalline corrosion was observed during tests at up to 1200 C. The service life of the alloy at 1200 C is $\geq$ 3000 hr. Temporary technical specification were developed at the "Elektrostal'" plant for wire and wire rod made from the alloy studied. I. Tulupova. [Translation of abstract]

[NT]

SUB CODE: 11/

Card 1/1 UDC: 669.245'26'71.018.5

ZHELEZNYAKOVA, Sh.R., inzh.; SHUR, N.F., inzh.

Scale and heat-resistant alloys in a cementation atmosphere. Metalloved. i term. obr. met. no.7:52-57 Jl '62. (MIRA 15:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrotermicheskogo oborudovaniya.

(Heat-resistant alloys—Metallography)
(Gases in metals)

S/129/62/000/007/008/008
E111/E535

AUTHORS: Zheleznyakova, Sh.R. and Shur, N.F., Engineers

TITLE: Non-scaling and heat resisting alloys in a carburizing atmosphere

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no.7, 1962, 52-57

TEXT: The authors have studied the behaviour of chromium, chromium-nickel and iron-chromium-aluminium steels and alloys at 1050°C in the following atmosphere: 0.1-0.2% CO_2, 30-35% CO, 55-60% H_2, 0.1-0.3% CH_4 and N_2 remainder. Details of the test procedure have been described previous (Elektrotermiya, no.2, 1961). The following were tested: resistance alloys types 0Х27Ю5А (OKh27Yu5A), 0Х23Ю5А (OKh23Yu5A), Х20Н80 (Kh20N80), Х20Н80Т3Б (Kh20N80T3B), Х27Н70Ю3 (Kh27N70Yu3), Х15Н60 (Kh15N60), Х15Н60Ю3А (Kh15N60Yu3A); deforming steels 1Х13 (1Kh13), 2Х13 (2Kh13), Х17 (Kh17), Х25 (Kh25), Х25Т (Kh25T), Х6СЮ (Kh6SYu), Х12СЮ (Kh12SYu), Х18СЮ (Kh18SYu), Х23Н18 (Kh23N18), Х25Н25ТР (Kh25N25TR), Х25Н16ГНАР (Kh25N16GNAR), ЭИ921 (EI921); cast steels Х18Н35Л (Kh18N359), Х18Н24С2Л (Kh18N24S2L), Х24-12Л (Kh2412L), Х25Н19С2Л

Card 1/2

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

(Kh25N19S2L). Surface corrosion was treated as being in two zones: continuous surface corrosion (scale) and intergranular. Gas content of treated specimens was determined by vacuum fusion at 1760°C. All the test steels are subject to scaling and many to intergranular oxidation as well; the steels and alloys pick up carbon, oxygen, hydrogen and nitrogen. The structure of type Kh18N35 steel after carburization consists of austenite, a mixture of carbide $(Fe,Cr)_{23}C_6$, $(Fe,Cr)_7C_3$ and σ-phase, that of type Kh18N24S2L steel consists of $(Fe,Cr)_7C_3$ and σ-phase. In batch furnaces with a carbon-containing atmosphere the authors recommend for resistance the alloys OKh27Yu5A and OKh23Yu5A (or Kh20N80, if required for constructional reasons); for parts of deforming steels, the alloys Kh23N18 and Kh25; and the Kh25N19S2L steel for cast parts. Replacement of the types Kh18N35 and Kh18N24S2L steels now used by Kh25N19S2L will lead to economy of scarce nickel. None of the cast alloys showed any tendency to intergranular corrosion. There are 4 figures.

ASSOCIATION: VNIIETO

GOYSA, N.I.; ZHELEZNYAKOVA, T.V.

Determining the thickness and some radiation characteristics of stratus and stratocumulus clouds according to the intensivity of the total radiation at the earth's surface. Trudy UkrNIGMI no.48:79-95 '65.

(MIRA 18:8)

ACC NR: AT6031970 (N) SOURCE CODE: UR/3199/66/000/015/0031/0043

AUTHOR: Goysa, N. I.; Zheleznyakova, T. V.; Perelet, N. A.

ORG: none

TITLE: Some sources of error in Yanishevskiy balancemeters

SOURCE: AN SSSR. Mezhduvedomstvennyy geofizicheskiy komitet. Meteorologicheskiye issledovaniya, no. 15, 1966, 31-43

TOPIC TAGS: HEAT BALANCE, RADIATION MEASUREMENT, ATMOSPHERIC RADIATION, balancemeter, heat exchange, turbulent exchange, pyrgeometer, radiation balance, sun shadow method, spectral range/ Yanishevskiy balancemeter.

ABSTRACT: The paper presents an evaluation of error sources in Yanishevskiy balancemeters. The errors are caused by the instability of heat exchange between sensitive surfaces and the surrounding air, and the difference in sensitivity of balancemeter sides. Based on experimental data, it is shown that the main cause of "noise" (fluctuations of readings) of balancemeters is the thermal inhomogeneity of the surrounding air and the turbulent exchange associated with it. The turbulent heat exchange of dynamic origin does not cause essential variations of balancemeter readings. This made it possible to work out a simple method of graduating the operating balancemeters based on long-

Card 1/2

ACC NR: AT6031970

wave radiation, using an identical balancemeter as the control instrument, which had been previously collated with the pyrgeometer or graduated in the black body. Elimination of the influence of balancemeter "noise" from the data is possible only by using balancemeters with artificial ventilation or by designing instruments with filters transparent in the long-wave spectral range. It is possible to reduce this influence by increasing the number of readings from 3 to 15—20. With a point registration or radiation balance, the number of points per hr for providing the necessary precision should be not less than 30—60. The measurement results are greatly influenced by the difference in sensitivity of balancemeter sides. If this difference is known, it can easily be taken into account during data processing. The difference in sensitivity of balancemeter sides to short-wave radiation can be easily determined by graduation with the sun-shadow method. The paper suggests a simple method for determining a similar difference in the long-wave spectral range. If the difference in sensitivity of sides is unknown, its influence can be avoided only by performing measurements with the balancemeter in two positions, the first and second sides facing upwards in turn. During processing of such readings, the influence of the sides is eliminated. Orig. art. has: 3 figures, 3 tables, and 22 formulas.

SUB CODE: 04/ SUBM DATE: none/ ORIG REF: 008/ OTH REF: 001

Card 2/2

VOLYNETS, L.M.; ZHELEZNYAKOVA, T.V.; OLEYNIK, R.N.; PERELET, N.A.

Recording the intensity of direct solar radiation by individual portions of the spectrum. Trudy UkrNIGMI no.41:186-192 '64. (MIRA 18:1)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

ZHELEZNYAKOVICH, P.A.

Establishing a stable feed supply on collective farms of Korelichi District. Zemledelie 7 no.8:75-78 Ag '59. (MIRA 12:10)

1.Sekretar' Korelichskogo raykoma Kommunisticheskoy partii Belorussii.

(Korelichi District--Feeds)

ZHELEZNYANSKAYA, N. S.

11H

C.A

Anabasine sulfate poisoning. N. S. Zhelezanyanskaya. Hig. i Sanit. (U.S.S.R.) 1945, No. 6, 20-3.—In 30 cases of accidental poisoning with anabasine sulfate (admixture to food), 30 patients showed severe symptoms, which developed soon after the food intake. The irritation of the mucous membranes of the mouth and the stomach caused by doses of 20-52 mg. lasted a long time, but there were no pathological changes in the gastro-intestinal tract. 5 references. C. S. Shapiro

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SAKHAROV, Dmitriy Ivanovich; BLUDOV, Mikhail Ivanovich; VERES, L.F., red.; ZHELEZNYKH, I.M., red.

[Physics for technical schools] Fizika dlia tekhnikumov. Izd.3., perer. Moskva, Nauka, 1965. 608 p. (MIRA 19:1)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8"

ZHELEZNYKH, I.M.

Covariant method for calculating cross sections and its application to certain reactions induced by neutrinos. IAd. fiz. 1 no.6:1056-1065 Je '65. (MIRA 18:6)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

ACC NR: AP5024650 IJP(c)

AUTHOR: Zheleznykh, I.M.; Zagrebin, V.A.

ORG: none

SOURCE CODE: UR/0048/65/029/009/1746/1748

TITLE: Resonance interaction of cosmic ray neutrinos with electrons /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

19 17 15

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1746-1748

TOPIC TAGS: secondary cosmic ray, neutrino, muon

ABSTRACT: The authors have calculated the flux at 2 km underground of muons arising from the resonance interaction of cosmic ray electronic antineutrinos with atomic electrons through the intermediary of a hypothetical boson of mass M between 0.5 and 2 BeV. Fluxes were calculated for three different angular ranges and are presented graphically as functions of M. Three sets of curves are presented, giving separately the muon fluxes due to electronic antineutrinos arising from muon decay, to electronic antineutrinos arising from K_{e3} decay, and to chi-neutrinos arising from pi-mu decay in accord with the theory of R.E.Marshak et al. (Nuovo cimento, 32, 408 (1964)) involving a second intermediate boson of mass $(20)^{1/4}M$. The muon flux does not vary greatly with depth; a change of 2 to 3 km in depth alters the muon flux by less than 20 %. The largest muon fluxes calculated in this paper are of the order of 0.01 muons/m^2 day.

Card 1/2

L 4523-66

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002064710003-8

ACC NR: AP5024650

The authors thank G.T.Zatsepin and M.A.Markov for valuable discussions. Orig. art. has: 5 formulas and 3 figures.

SUB CODE: NP/ SUBM DATE: 00/- ORIG REF: 001/ OTH REF: 008

60

Card 2/2

ZHELEZNYKH, I.M.; ZATSEPIN, G.T.; KUZ'MIN, V.A.; MARKOV, M.A.

Physics of high-energy neutrinos in cosmic rays. Izv. AN SSSR. Ser. fiz. 26 no.6:738-741 Je '62. (MIRA 15:6)

(Neutrinos) (Cosmic rays)

S/048/62/026/006/009/020
B125/B102

AUTHORS: Zheleznykh, I. M., Zatsepin, G. T., Kuz'min, V. A., and Markov, M. A.

TITLE: Neutrino physics of high energies in cosmic rays

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 6, 1962, 738-741

TEXT: Some possibilities of neutrino physics in cosmic radiation are evaluated. The energy spectrum and angular distribution of the products (e.g. muons) of cosmic neutrino reactions with matter can be calculated accurately. The low intensity of the neutrino flux necessitates using large-area measuring equipment, e.g. several series of scintillators. Muons may result from the reaction

$$\begin{aligned} &(a)\ \nu + n \to p + \mu^-(e^-), \\ &(b)\ \bar{\nu} + p \to n + \mu^+(e^+), \\ &(c)\ \bar{\nu} + n \to \Sigma^- + \mu^+(e^+), \\ &(d)\ \bar{\nu} + p \to \Sigma^0 + \mu^+(e^+), \\ &(e)\ \bar{\nu} + p \to \Lambda^0 + \mu^+(e^+). \end{aligned} \qquad (1).$$

Card 1/3

Neutrino physics of high energies ... S/048/62/026/006/009/020
B125/B102

In the case of point interaction, the reaction (1a) has the cross section $\sigma_\nu \approx 1.5 \cdot 10^{-38} E_\nu \, cm^2$ and $\sigma_\nu \approx 0.5 \cdot 10^{-38} E_\nu cm^2$ (E in Bev) holds for (1,b,c,d,e). When the energies increase to above the Bev range, the cross sections are modified by a form factor. The four-fermion interaction involving baryons and also total interaction can be cut off by the Hofstadter form factor. In this case, weak interactions could supply information as to the usual electromagnetic form factors of the nucleon. If, using the laboratory system, the cross section of the $\nu + N \rightarrow N' + \mu$-type reaction is not cut off up to neutrino energies of $E_\nu = 300$ Bev, an apparatus with an active area of 300 m^2 is capable of recording annually 70, 50 and 30 muons at thresholds of 0.5, 1 and 3 Bev, respectively. In the case of cutting off with the Hofstadter form factor, 12, 9 and 3.5 events are recorded annually at thresholds of 0.5, 1 and 3 Bev, respectively. In connection with the possible existence of an intermediate boson, reactions of the type

$$\nu + Z \rightarrow W + \mu + Z', \quad \bar{\nu} + Z \rightarrow W + \mu + Z', \qquad (4),$$

$$\bar{\nu} + e^- \rightarrow W^- \rightarrow \mu^- + \bar{\nu}, \qquad (5),$$

Card 2/3

Neutrino physics of high energies ... S/048/62/026/006/009/020
B125/B102

$$\begin{gathered}\nu + n \to W' \to p + \mu \\ \bar{\nu} + p \to W' \to n + \mu\end{gathered} \qquad (6)$$

are of interest. When the neutrinos ν_μ and ν_e are of different natures, the reaction (5) can be due only to ν_e neutrinos from muon decay. The result obtained by J. C. Barton (Phys. Rev. Lettrs. 5, 514, 1960) furnishes no proof for the absence of an intermediate boson with the mass of the K-particle. In the first stage of a subterranean experiment the muons produced during the reactions (1) will be recorded, as electrons are much more difficult to record. There are 3 figures.

Card 3/3

ANDREYEV, V.P., polkovnik; BORISOV, D.S., polkovnik; SHOR, D.I., dotsent, kand.tekhn.nauk, insh.-polkovnik zapasa; ZHELEZNYKH, V.I., dotsent, kand.tekhn.nauk, general-leytenant inzhenernykh voysk, otv.red.; KHRENOV, A.F., general-polkovnik inzhenernykh voysk, red.; NAZAROV, K.S., dotsent, general-polkovnik inzhenernykh voysk v otstavke, red.; KOVALENKO, L.P., red.; STREL'NIKOVA, M.A., tekhn.red.

[Military engineering and the Corps of Engineers in the Russian Army; a collection of articles] Voenno-inzhenernoe iskusstvo i inzhenernye voiska russkoi armii; sbornik statei. Moskva, Voen. izd-vo M-va obor. SSSR, 1958. 209 p. (MIRA 12:6)
(Military engineering)

PROSHLYAKOV, A.I.; ZHELEZNYKH, V.I.; BYCHEVSKIY, B.V.; ZOTOV, V.F.; LYAMIN, N.I.; IVANOV, D.S.; BLAGOSLAVOV, B.V.; BARANOV, N.P. PANKOV, M.A.; OGORODNIKOV, V.A.; FILONENKO-BORODICH, M.M.; IL'YASEVICH, S.A.; RABINOVICH, I.M.; OLISOV, B.A.; DAVYDOV, S.S.; ZIMIN, D.D.; SHPERK, B.F.; USKOV, V.N.; BUZNIK, P.K.

Boris Aleksandrovich Olivetskii; obituary. Voen.-inzh.zhur. 101 no.12:42 D '57. (MIRA 10:12)
(Olivetskii, Boris Aleksandrovich, 1896-1957)

ANDREYEV, V.P., polkovnik,; BORISOV, D.S., polkovnik,; YEVTUSHENKO, A.F., polkovnik,; ZHELEZNYKH, V.I., dots., kand. tekhn. nauk, general-leytenant inzhenernykh voysk, otv. red.; TSIRLIN, A.D., doktor voyennikh nauk, general-polkovnik inzhenernykh voysk, red.; NAZAROV, K.S., dots., general-polkovnik inzhenernykh voysk v ostavke, red.; BADANIN, B.V., polkovnik v zapase, red.; BABUSHKIN, K.N., polkovnik, red.; TSEGENKO, P.G., polkovnik, red.; YEMEL'YANOV, P.A., polkovnik, red.; DROZHZHINOV, Ye.G., polkovnik, red.; PAKHOMOV, V.Ya., polkovnik, red.; SMIRNOV, V.V., polkovnik, red.; GORCHAKOV, A.D., podpolkovnik, red.; MEDNIKOVA, A.N., tekhn. red.

[Engineers of the Soviet Army in important operations of the Great Patriotic War; a collection of articles] Inzhenernye voiska Sovetskoi armii v vazhneishikh operatsiiakh Velikoi Otechestvennoi voiny; sbornik statei. Moskva, Voen. izd-vo M-va obor. SSSR, 1958. 309 p. (MIRA 11:12)

(World War, 1939-1945--Engineering and construction)

ZHELEZNYKH, V.I., general-mayor inzh. voysk.

Soviet military engineering during forty years. Voen.-inzh. zhur. 101 no.2:15-21 F '58. (MIRA 11:3)
(Military engineering)

ANDREYEV, V.P., polkovnik; BORISOV, D.S., polkovnik; ZHELEZNYKH, V.I., dotsent, kand.tekhn.nauk, general-leytenant inzhenernykh voysk v otstavke, otv.red.; NAZAROV, K.S., dotsent, general-polkovnik inzhenernykh voysk v otstavke, red.; KHRENOV, A.F., general-polkovnik inzhenernykh voysk, red.; SHOR, D.I., dotsent, kand. tekhn.nauk, inzhener-polkovnik zapasa, red.; ROSSAL, N.A., polkovnik, red.; KHLYSTALOV, S.I., polkovnik, red.; SOLOMONIK, R.L., tekhn.red.

[The Soviet military engineers, 1918-1940; collection of articles] Sovetskie inzhenernye voiska v 1918-1940 gg.; sbornik statei. Moskva, Voen.izd-vo M-va obor.SSSR, 1959. 141 p. (MIRA 13:4)
(Military engineering)

VLADIMIROV, Boris Mikhaylovich; BELOSHAPKO, Valerian Fedorovich; ARISTOV, P.I., retsenzent; ZHELEZNYY, A.N., retsenzent; GOLUBEV, N.M., red.; GOLUBKOV, V.A., tekhn. red.

[Over-all modernization of the equipment of cotton-spinning factories] Kompleksnaia modernizatsiia oborudovaniia khlopkopriadil'nykh fabrik. Moskva, Izd-vo nauchno-tekhn. lit-ry RSFSR, 1960. 156 p. (MIRA 14:5)

(Cotton manufacture—Equipment and supplies)

(Spinning machinery)

L 27361-66 EWT(m)

ACC NR: AP6012248 (A) SOURCE CODE: UR/0097/65/000/012/0030/0033

AUTHOR: Zheleznyy, V. I. (Engineer)

ORG: none

33
B

TITLE: Certain peculiarities of ice formation in hydrophobic porous concretes

15

SOURCE: Beton i zhelezobeton, no. 12, 1965, 30-33

TOPIC TAGS: concrete, freezing, porosity, organosilicon compound, kerosene, sorption

ABSTRACT: The amount of ice formation in the pores of porous hydrophobic concrete was determined. The concrete was rendered hydrophobic by treatment with an organosilicon liquid and kerosene. The amount of ice formation was determined after the method of Z. A. Nersesova (Fazovyy sostav vody v gruntakh pri zamerzanii i ottaivanii. Materialy po laboratornym issledovaniyam merzlykh gruntov. Sb. 1, Izd. AN SSSR, M., 1953). The experimental results are shown in graphs and tables (see Fig. 1). A freezing mechanism for water in hydrophilic and hydrophobic concretes is proposed. This mechanism is based on the pressure difference between the pressures on the opposite sides of a curved liquid surface. It was found that a greater fraction of the water freezes in the pores of hydrophobic than in hydrophilic concretes.

2

Card 1/2 UDC: 666.973.6

L 27361-66

ACC NR: AP6012248

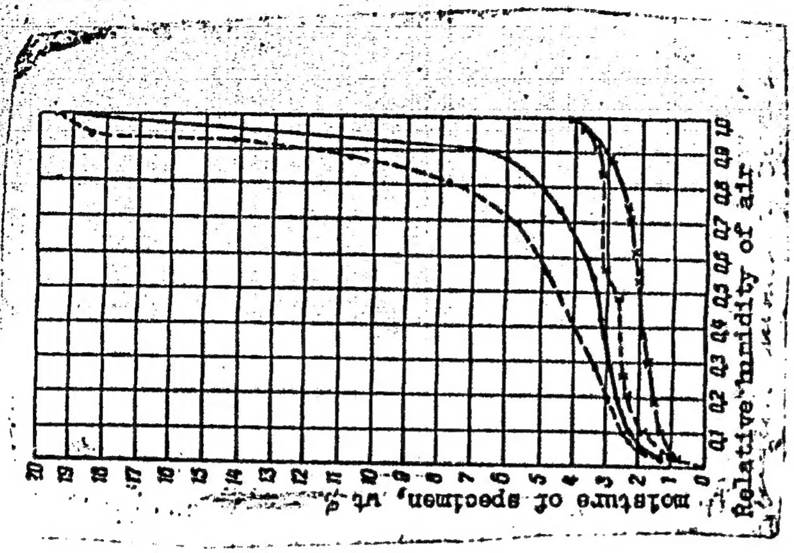

Fig. 1. Sorption and desorption isotherms for porous concrete (density 730 kg/m^3) at 20C. Open circles - non-hydrophobic; crosses - hydrophobic; solid line - sorption; dashed line - desorption.

Orig. art. has: 1 table, 2 graphs, and 3 equations.

SUB CODE: 11,20/SUBM DATE: None/ ORIG REF: 005

Card 2/2

ACC NR: AR7001756 SOURCE CODE: UR/0274/66/000/010/B083/B084

AUTHOR: Zhelezovskiy, B. Ye.

TITLE: Specific features of the electrostatic pumping of a parametric amplifier of fast cyclotron waves

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 10B581

REF SOURCE: Sb. Vopr. elektron. sverkhvysok. chastot. Vyp. 2. Saratov. Saratovsk. un-t, 1966, 22-25

TOPIC TAGS: parametric amplifier, cyclotron, ~~fast~~ cyclotron wave, synchronous wave, electron flux, electrostatic pumping

ABSTRACT: The design of electrostatic pumping (ESP) can be presented in several different versions, one of which consists of a system of rings with different potentials which are placed along the axis of electron-flux propagation. In analyzing the electron behavior in an ESP field emphasis should be placed on changes in the trajectory of the electron and the effects of periodic actions in the direction of its motion. With this in mind, a dispersion equation is derived for actively coupled

Card 1/2 UDC: 621.375.8:621.385.6